Partial EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 15, Subpart B
&
Industry Canada (IC), ICES-003

A division of Research In Motion Limited

REPORT NO.: RTS-2579-1107-64

PRODUCT MODEL NO.: RDD71UW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARDD70UW
IC: 2503A-RDD70UW

DATE: July 15, 2011

Statement of Performance:

The BlackBerry® smartphone, model RDD71UW, part number CER-39234-001 Rev. 4 and accessories when configured and operated per RIM's operation instructions, and performs within the requirements of the test standards.

Declaration:

We hereby certify that:
The test data reported herein is an accurate record of the performance of the sample(s) tested.
The test results are valid for the tested unit (s) only.
The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.
The test methods were consistent with the methods described in the relevant standards.

Documented by:

Shuo Wang
Regulatory Compliance Specialist
Date: July 15, 2011

Reviewed by:

Heng Lin
Regulatory Compliance Specialist
Date: July 15, 2011

Reviewed and Approved by:

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A. Scope

This report details the results of compliance tests that were performed in accordance with the requirements of:

- FCC CFR 47 Part 15, Subpart B, October, 2010 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators

B. Associated Documents

1. 1-3314-01-19_11-B

C. Product Identification

Manufactured by Research In Motion Limited whose headquarters is located at:
295 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

The equipment under test (EUT) was tested at the following locations:

RIM Testing Services EMI test facilities

305 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

440 Phillip Street
Waterloo, Ontario
Canada, N2L 5R9
Phone: 519 888 7465
Fax: 519 888 6906

The testing was performed from July 05 to July 06, 2011.

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The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN	Software
1	RDD71UW	CER-39234-001 Rev 4	27AE9DCD	V7.0.0.169 Bundle 1069
2	RDD71UW	CER-39234-001 Rev 4	27AE9E1E	V7.0.0.169 Bundle 1069

AC conducted testing was performed on sample 1.
Radiated Emissions testing was performed on sample 2.

BlackBerry® smartphone Accessories Tested

1) Alt.1 Fixed Blade Charger part number HDW-24481-001 (model number PSM04A-050QRIM) with an output current of 750mA and voltage of 5.0 volts dc.
2) Captive Cable Charger, part number HDW-17957-003 with an output current of 750mA and voltage of 5.0 volts dc.
3) Premium Stereo Headset, part number HDW-15766-005, 1.3 meters long.
4) Bluetooth Headset part number HDW-25937-001.
5) USB Data Cable, part number HDW-06610-005, 1.5 meters long.

D. Support Equipment Used for the Testing of the EUT

1) IBM Thinkpad Lenovo T60p laptop, type 8742-C2U, product ID 8742C2U

E. Summary of Results

SPECIFICATION		TEST TYPE	Meets Requirement	Test Data APPENDIX
FCC CFR 47	IC			
Part 15, Subpart B	ICES-003	Conducted AC Line Emission	Yes Also see 1-3314-01-19_11-B	1
Part 15, Subpart B	ICES-003	Radiated Unintentional Spurious Emissions	Yes Also see 1-3314-01-19_11-B	2

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a) AC CONDUCTED EMISSIONS

The conducted emissions were measured using the test procedure outlined in CISPR Recommendation 22 through a 50 Ohm Line Impedance Stabilization Network (LISN), which was inserted in the power line to the equipment to provide the specified impedance for measurements. The EUT was placed on a nonconductive wooden table, 80 cm high that was positioned 40 cm from a vertical ground plane. The RF output of the network was connected to an EMI receiver system with characteristics that duplicate those of the receiver specified in CISPR Publication 16. BlackBerry® smartphone was in battery charging mode. The input voltage was 120 V, 60 Hz.

The following test configurations were measured for model RDD71UW:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM 850 Idle, Audio Playback	Alt.1 Fixed Blade Charger Premium Stereo Headset 1.5m USB cable

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit. The sample EUT had a worst case test margin of 14.60 dB below the QP limit at 0.155 MHz using the quasi-peak detector, Test Configuration 1.

Measurement Uncertainty ±3.0 dB

To view the test data/plots, see APPENDIX 1.

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b) RADIATED EMISSIONS

The radiated emissions from the EUT were measured using the methods outlined in CISPR Recommendation 22. The EUT was placed on a nonconductive styrofoam table, 80 cm high that was positioned on a remote controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. The turntable was rotated to determine the azimuth of the peak emissions. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The maximum emission level was recorded. The frequency range measured was from 30 MHz to 5.0 GHz. Both the horizontal and vertical polarizations of the emissions were measured.
The measurements were done in a semi-anechoic chamber. The FCC registration number is **778487** and the Industry Canada(IC) file number is **2503B-1**. The EUT was configured and operated to produce the maximum radiated emissions while still keeping within RIM's specifications.
The BlackBerry® smartphone was in battery charging mode for all configurations. The ac input voltage was 120V, 60Hz.

The following test configurations were measured for model RDD71UW:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM 850 Idle	Captive Cable Charger + Bluetooth Headset

The system's radiated emission levels were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit.
The system met the requirements with a worst case emission test margin of 14.40 dB at 193.40 MHz using quasi-peak detector in Test Configuration 1.

To view the test data see APPENDIX 2.

Sample Calculation:

Field Strength (dBµV/m) is calculated as follows:
FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB)

Measurement Uncertainty ±4.6 dB

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F. Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier	Sonoma	310N/11909A	185831	11-11-14	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	11-09-13	Radiated Emissions
EMC Analyzer	Rohde & Schwarz	ESIB 40	3942A00517	11-11-28	Radiated Emissions
T/RH Meter	OMEGA	iTHX-SD	0380561	11-10-13	Radiated Emission
T/RH Meter	OMEGA	iTHX-SD	0380567	11-10-13	Radiated Emission
L.I.S.N.	Rohde & Schwarz	ENV216	100060	11-12-10	Conducted Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	12-01-14	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	11-09-23	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	11-11-29	Radiated/Conducted Emissions
EMI Test Receiver	Rohde & Schwarz	ESU 40	100162	11-10-30	Radiated/Conducted Emissions

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APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

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AC Conducted Emissions Test Results

The following test configurations were measured for model RDD71UW.

The following tests were performed by Shuo Wang.

Test Configuration 1

Date of the test: July 06, 2011
The environmental conditions were: Temperature: 25.9 °C
Humidity: 41.9 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.155	L1	40.03	11.17	51.20	65.80	55.80	**-14.60**
0.155	N	36.80	11.20	48.00	65.80	55.80	-17.80
0.168	N	34.54	11.11	45.65	65.10	55.10	-19.45
0.177	N	33.76	11.05	44.81	64.60	54.60	-19.80
0.186	L1	36.93	10.95	47.89	64.20	54.20	-16.31
0.195	L1	36.49	10.89	47.38	63.80	53.80	-16.42
0.200	N	30.74	10.89	41.62	63.60	53.60	-21.98
0.209	N	29.22	10.82	40.05	63.30	53.30	-23.25
0.240	L1	30.52	10.58	41.10	62.10	52.10	-21.00
0.281	L1	28.06	10.29	38.35	60.80	50.80	-22.45
0.344	L1	29.51	10.10	39.60	59.10	49.10	-19.50
0.366	L1	23.48	10.06	33.54	58.60	48.60	-25.06
0.479	L1	21.67	9.92	31.59	56.40	46.40	-24.81
0.542	L1	26.36	9.89	36.25	56.00	46.00	-19.75
0.618	L1	26.37	9.85	36.22	56.00	46.00	-19.78
2.090	L1	25.26	9.83	35.09	56.00	46.00	-20.92
3.287	L1	26.51	9.88	36.40	56.00	46.00	-19.60
3.939	L1	29.31	9.90	39.21	56.00	46.00	-16.79
4.799	N	24.72	9.91	34.63	56.00	46.00	-21.37

All other emission levels had a test margin of greater than 25 dB.
Measurements were done with the quasi-peak and average detectors. See figure 1-1 and figure 1-2 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

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AC Conducted Emissions Test Graphs

Test Configuration 1

Figure 1-1: L1 lines

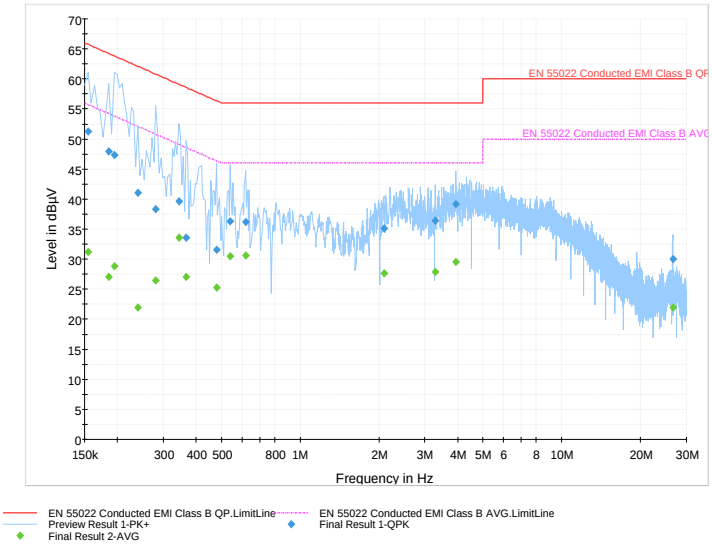
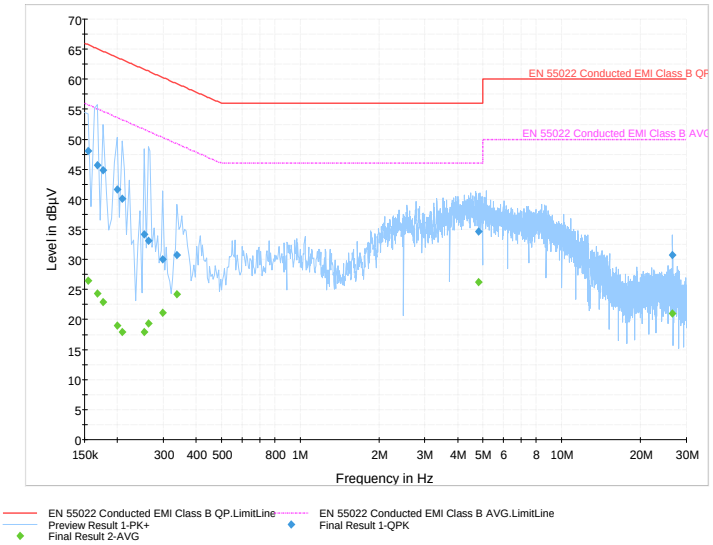


Figure 1-2: N Lines



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APPENDIX 2 - RADIATED EMISSIONS TEST DATA (RDD71UW)

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Radiated Emissions Test Results

The following test configurations were measured for model RDD71UW.

The following tests were performed by Quan Ma

Test Configuration 1

Date of the test: July 05, 2011
The environmental conditions were: Temperature: 24.5 °C
Humidity: 36.5 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading +corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
37.600	V	1.47	275.00	Q.P.	35.87	-14.83	21.04	40.00	-18.96
72.100	V	2.48	69.00	Q.P.	39.56	-15.99	23.57	40.00	-16.43
73.300	H	3.75	171.00	Q.P.	36.82	-15.85	20.97	40.00	-19.03
193.200	H	1.20	194.00	Q.P.	30.19	-10.67	19.52	43.50	-23.98
193.400	V	1.41	69.00	Q.P.	39.69	-10.59	29.10	43.50	**-14.40**
344.850	H	2.61	154.00	Q.P.	30.75	-3.24	27.51	46.00	-18.49
345.000	V	2.81	8.00	Q.P.	32.70	-3.22	29.48	46.00	-16.52
37.600	V	1.47	275.00	Q.P.	35.87	-14.83	21.04	40.00	-18.96

All other emission levels had a test margin greater than 25 dB.

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